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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/712,066      | 11/13/2003  | Johnny Zhong         | 15436.133.1         | 7926             |

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EXAMINER

KIANNI, KAVEH C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2883

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/712,066

Applicant(s)

ZHONG ET AL.

Examiner

Kianni C. Kaveh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-11,14-19 and 22-28 is/are rejected.
- 7) ☒ Claim(s) 2,3,12,13,20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Allowable Subject Matter***

Claims 2-3, 12-13 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2, 12 and 20 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein an absolute value of said negative coefficient of thermal expansion is approximately equal to an absolute value of said positive coefficient of thermal expansion in combination with the rest of the limitations of the base claim.

Claims 3, 13 and 21 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said material comprises a ceramic in combination with the rest of the limitations of the base claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly

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owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4-11, 14-19 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over combination of Sasoka et al. (US 5430821) and Carberry et al. (US 6278821).

Regarding claims 1, 4-9, 11, 14-18, Sasoka teaches an athermal fused optical fiber/waveguide coupler (shown in at least fig. 2) comprising: at least two optical waveguides/fibers 1, at least a portion of each of said optical waveguides being fused together to form a fused section having a positive coefficient of thermal expansion (see at least fig. 4, item fused coupling region of the coupler and col. 2, 1<sup>st</sup> parag.) , and a ferrule/jacket/casing surrounding said fused section, said jacket being formed from a material having a coefficient of thermal expansion CTE (see at least abstract); wherein said ferrule/jacket/casing being mounted to and disposed from said fused section of said fiber optic cables by a filler material 2 disposed in a gap between said ferrule and said fused section and having CTE (see at least fig. 4, item 2; also col. 4, 3<sup>rd</sup> paraq. and col. 2, 4<sup>th</sup> parag.).

Sasoka further teaches wherein said waveguides comprise fiber optic cables and wherein said fused section is fixed within said jacket using a resin (see col. 1, last parag.).

However, Sasoka does not specifically teach wherein the above jacket/ferrule/case CTE is negative; and wherein the above fibers are single mode and the resin CTE is equal to zero and/or positive. Nevertheless, Sasoka states that the filler material can be chosen to be equivalent in CTE to that of the fusing portion (see col. 2, 4<sup>th</sup> parag.). Carberry et al. teaches a athermal optical coupler in which the jacket/ferrule 30 has a negative CTE (see col. 3, lines 29-44). Thus, Carberry provides means that is highly insensitive to temperature variations (see col. 1, lines 58-63). Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to modify Sasoka's fused coupler by replacing Sasoka's ferrule/jacket with that of Carberry's ferrule 30 in order to provide athermal coupler that includes the above limitations since such coupler would counter temperature variation by lowering stress on fiber fusion segment and control polarization change (col. 2, 4<sup>th</sup> parag.). With regard to the resin epoxy CTE to be zero or positive this limitations has little or little bearings in the invention and the material resin material having positive/negative/zero CET is well known in the art—see prior art of the record below and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of **obvious design choice**. *In re Leshin*, 125 USPQ 416.

Regarding claim 10, as sated in rejection of claim 1, Sasoka further teaches wherein said fused section allows light signals traveling on a first optical waveguide to be propagated onto a second optical waveguide and vice versa (see col. 4, 2<sup>nd</sup> parag.);

14. The fused fiber optic coupler of claim 11, wherein said coupler is fixed within said ferrule using a resin.

Regarding claim 19, Sasoka teaches a method for manufacturing an athermal fiber optic coupler (shown at least in fig. 2; also see col. 1, 1<sup>st</sup> parag. and col. 2, 4<sup>th</sup> parag.), said method comprising:

a step for fusing together at least a portion of at least two fiber optic cables to form an optical coupler, said optical coupler having a positive coefficient of thermal expansion (see abstract, and col. 2, 1<sup>st</sup> parag.); a step for mounting a jacket to said optical coupler (see at least abstract), said jacket being formed from a material having a coefficient of thermal expansion CTE (see at least abstract); and a step for injecting a filler material into a gap between said ferrule and said fused section (shown in fig. 4, item filler material/adhesive 2). Regarding the limitations jacket/ferrule/case CTE being negative, the above fibers being single mode and the resin CTE to be equal to zero and/or positive, the arguments presented in rejection of claim 1, having combinational and/or prior art teachings of Sasoka and Carberry, is analogous in rejection of claim 19.

Regarding claims 22-26 the arguments presented in rejection of claims 14-18, above, is analogous in rejection of claims 22-26.

With regard to claim 27, as stated in rejection of claim 19, above, Sasoka further teaches wherein the step of fusing together said portions of said at least two fiber optic

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cables includes a step for stripping a cladding component away from said portions to expose said portions (see at least abstract);

Regarding claims 28, the arguments presented in rejection of claim 5, above, is analogous in rejection of claim 28.

### ***Citation of Relevant Prior Art***

Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Stowe et al. 4632513 teaches single mode fiber coupler

Lue et al. 6324322 teaches epoxy with positive CTE in a coupler

Jin et al. 6326685 teaches epoxy with negative CTE in coupler

Dvorsky et al. teaches epoxy with zero and negative CTE in a coupler

Levyva et al. 6434287

Belt 6085001

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

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The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

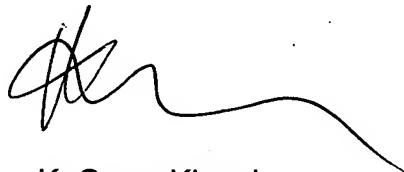
**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'K. Kianni', with a long horizontal flourish extending to the right.

K. Cyrus Kianni  
Patent Examiner  
Group Art Unit 2883

June 16, 2005